भारतीय मानक
Indian Standard

IS 11486 : 2021

कॉस्मेटिक उद्योग के लिए एरंडी का तेल — विशिष्टि

(पहला पुनरीक्षण)

Castor Oil for Cosmetic Industry — Specification

(First Revision)

ICS 71.100.70

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भारतीय मानक ब्यूरो
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September 2021 **Price Group 6**

Cosmetics Sectional Committee, PCD 19

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Cosmetics Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

This standard was first published in 1985 which was drawn up specifically to cater to the needs of the cosmetic industry.

The first revision was taken up to keep pace with the latest technological developments and international practices. In this revision following major changes have been made:

a) The limiting requirement of peroxide value has been changed to 5 meq/kg, *Max* in Table 1,

b) Requirements of lead, mercury, optical rotation, light absorbance and gas chromatographic analysis have been incorporated in Table 1, and

c) An optional requirement of Total Aflatoxin has been added (25 ppb, max) and is determined using High Performance Liquid Chromatography (HPLC).

The composition of the Committee responsible for formulation of this standard is given at Annex K.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

CASTOR OIL FOR COSMETIC INDUSTRY — SPECIFICATION

(First Revision)

1 SCOPE

1.1 This standard prescribes requirements and methods of sampling and test for castor oil for cosmetic industry.

1.2 For castor oil of medicinal, firsts special, firsts and commercial grade, a separate standard, IS 435 Specification for castor oil has been published.

2 REFERENCES

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below.

IS No.	*Title*
321 : 1964	Absolute alcohol — Specification
323 : 2009	Rectified spirit for industrial use (*second revision*)
326 (Part 4) : 2005	Methods of sampling and test for natural and synthetic perfumery materials: Part 4 Determination of optical rotation (*third revision*)
460 (Part 1) : 2020	Test sieves — Specification: Part 1 Wire cloth test sieves (*fourth revision*)
548 (Part 1) : 1964	Methods of sampling and test for oils and fats: Part 1 Methods of sampling, physical and chemical tests
548 (Part 2) : 1976	Methods of sampling and test for oils and fats: Part 2 Purity tests (*third revision*)
16287 : 2015/ ISO 16050 : 2003	Foodstuffs — Determination of aflatoxin B1 , and the total content of aflatoxins B1, B2, G1 and G2 in cereals, nuts and derived products.
16913 : 2018	Methods of test for cosmetics — Determination of heavy metals (arsenic, cadmium, lead and mercury) by atomic absorption spectrometry (AAS)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in **2** of IS 548 (Part 1) shall apply in addition to the following.

3.1 Silica Scale Unit — Turbidity imparted by 1 mg of fullers' earth when suspended in 1 000 ml of distilled water.

4 REQUIREMENTS

4.1 Description

The material shall be castor oil obtained from castor seeds (*Ricinus communis* Linn., fam. Euphorbiaceae) by a process of cold expression. The oil shall have further undergone bleaching with bleaching earth or activated carbon or both and deodorisation with steam. The oil shall be practically odourless or have a very mild odour characteristics of castor oil. The material shall be free from sediment, suspended and other foreign matter and separated water.

4.2 Admixture with other Oils

The material shall be free from admixture with other oils when tested according to the methods prescribed in IS 548 (Part 2).

4.3 The castor oil shall not contain total aflatoxins, more than 25 µg/kg, when tested by the method prescribed in 16287 : 2015/ISO 16050 : 2003 (Foodstuffs — Determination of aflatoxin B1 , and the total content of aflatoxins B1 , B2 , G1 and G2 in cereals, nuts and derived products. The test for total aflatoxin shall be performed if agreed to between the purchaser and the supplier.

4.4 The castor oil shall also comply with the requirements given in Table 1, when tested as prescribed in col 4 and 5 of Table 1.

Table 1 Requirements for Castor Oil for Cosmetic Industry

(*Clauses* 4.3)

Sl No.	Characteristic	Requirements	Methods of Test Ref to	
			Annex	IS
(1)	(2)	(3)	(4)	(5)
i)	Turbidity value (in terms of silica unit)	10.0	A	–
ii)	Colour in a 1″ cell on the Lovibond scale, expressed as (Y + 5R) units, *Max*	4.0	–	**13** of IS 548 (Part 1)
iii)	Relative density at 30º/30 ºC	0.954 to 0.960	–	**11** of IS 548 (Part 1)
iv)	Refractive index at 40 ºC	1.4700 to 1.4740	–	**10** of IS 548 (Part 1)
v)	Critical solution temperature, ºC, *Max*	0	B	–
vi)	Acid value, *Max*	2.0	–	**7** of IS 548 (Part 1)
vii)	Saponification value	177 to 185	–	**15** of IS 548 (Part 1)
viii)	Unsaponifiable matter, percent by mass, *Max*	0.8	–	**8** of IS 548 (Part 1)
ix)	Acetyl value, *Min*	143.0	–	**16** of IS 548 (Part 1)
x)	Iodine value (Wij's)	82 to 90	–	**14** of IS 548 (Part 1)
xi)	Moisture and volatile, percent by mass, *Max*	0.25	–	**5.1** and **5.2** of IS 548 (Part 1)
xii)	Test for rancidity	To pass the test	C	–
xiii)	Test for detection of cold pressed/hot pressed oil	Shall be cold pressed only	D	–
xiv)	Peroxide value, meq/kg, *Max*	5	E	–
xv)	a) Heavy metal (as pb), mg/kg, *Max*	20	F	IS 16913
	b) Lead, mg/kg, *Max*	10	–	IS 16913
	c) Arsenic, mg/kg, *Max*	2.0	G [1)]	IS 16913
	d) Mercury, mg/kg, *Max*	0.25	–	IS 16913
xvi)	Optical rotation	+ 3.5 to 6.0	–	IS 326 (Part 4)
xvii)	Light absorbance (at 269 nm), *Max*	1.0	H	–
xviii)	Gas Chromatographic Analysis		J	–
	a) Palmitic acid, percent by mass, *Max*	2.0		
	b) Stearic acid, percent by mass, *Max*	2.5		
	c) Oleic acid and its isomers, percent by mass, *Max*	2.5 – 6.0		
	d) Linoleic acid, percent by mass, *Max*	1.0		
	e) Linolenic acid, percent by mass, *Max*	1.5		
	f) Eicosenic acid, percent by mass, *Max*	1.0		
	g) Ricinolic acid, percent by mass, *Max*	84 – 92		

[1)] In case of dispute, method given at Annex G shall be the referee method.

5 PACKING AND MARKING

5.1 The material shall be packed in suitable well closed containers which do not deteriorate the product, in quantities as agreed to between the purchaser and the supplier.

5.2 The package shall be securely closed and legibly marked with the following information's.

a) Name of the material;
b) Manufacturer's name and/or his recognized trade-mark, if any;
c) Net quantity of the material in the container;
d) Batch number, month and year of manufacture; and
e) Any other information required by Statutory Authorities.

5.3 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

6 SAMPLING

6.1 Representative samples of the castor oil shall be drawn as prescribed under **3** of IS 548 (Part 1).

6.2 Tests for all the requirements shall be carried out on a composite sample.

6.3 The material shall be taken to have conformed to this standard if the composite sample passes all the test. The test for Total Aflatoxin is an optional test and shall be performed if agreed to between the purchaser and the supplier.

6.4 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water [*see* IS 1070 'Reagent grade water (*third revision*)] shall be used in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

[*Table* 1, *Sl No*. (i)]

DETERMINATION OF TURBIDITY OF SILICA SCALE

A-1 PREPARATION OF TURBIDITY STANDARDS

A-1.1 Mix slowly with constant stirring 5.000 g of fullers' earth, previously dried and sieved through 75 µm IS sieve [*see* IS 460 (Part 1) 'Test sieves: Part 1 Wire cloth test sieves (*third revision*)'] with distilled water and dilute it to 1 000 ml. Agitate intermittently for one hour and then allow to stand for 24 h. Withdraw the supernatant liquid without disturbing the sediment. Evaporate about 50 ml of the removed liquid, dry the residue at 105 ± 2 °C and weigh the residue to determine the amount of clay in suspension. Prepare turbidity standards with the standardized stock suspension with distilled water. A drop of saturated mercuric chloride solution may be added as preservative. The standards are stable for 3 months.

A-2 PROCEDURE

A-2.1 Pour the sample after thorough shaking into a clear glass bottle of suitable capacity. Compare it with the turbidity standards contained in similar bottles, holding them against a suitable background and using a source of light which illuminates them equally. The light source shall be placed in a position that no rays reach the eye directly. The sample and the standards shall be shaken simultaneously immediately before comparison.

A-2.1.1 *Report*

Record the turbidity readings in the range 1 to 10 to the nearest unit and in the range 11 to 100 to the nearest 5 units.

ANNEX B

[*Table* 1, *Sl No*. (v)]

DETERMINATION OF CRITICAL SOLUTION TEMPERATURE

B-1 REAGENTS

The reagents shall be prepared by diluting ethyl alcohol (conforming to IS 321) or rectified spirit (conforming to IS 323) with distilled water till the relative density of the mixture at 15.5 ºC is 0.8303 ± 0.0001, when compared with distilled water at the same temperature. Denatured alcohol shall not be used for this test.

B-2 PROCEDURE

Mix in a test tube 1.0 g of the material with 4.15 times its mass of the reagent. On examination, the solution thus obtained shall be perfectly clear at 20 °C and shall remain clear when cooled and maintained for 5 min at a temperature of 0 °C.

ANNEX C

[*Table* 1, *Sl No*. (xii)]

TEST FOR RANCIDITY

C-1 REAGENTS

C-1.1 Phloroglucinol Solution — Dissolve 0.1 g of phloroglucinol in 100 ml diethyl ether.

C-2 PROCEDURE

Shake 10 ml of the material (melt it if necessary) with 10 ml of concentrated hydrochloric acid and 10 ml of phloroglucinol solution. Shake for 1 *min*.

C-2.1 The material shall be taken to have passed the test if no pink colour develops.

ANNEX D

[*Table* 1, *Item* (xiii)]

METHOD FOR THE DETECTION OF THE PROCESSING (COLD PRESSED OR HOT PRESSED) OF CASTOR OIL

D-1 GENERAL

The method involves the isolation of toxic components (Ricinine, etc) from the castor oil by its treatment with acetone solution followed by its extraction with chloroform. The chloroform extract is cleaned up, concentrated and spotted on TLC plates. The plates are developed at chamber saturation and excited under fluorescent light for visualization of the alkaloid(s). The hot pressed castor oil yields typical fluorescent spots in ultra violet light (365 nm).

D-2 APPARATUS

D-2.1 U.V. Lamp — For fluorescence excitation in the long wave region.

D-2.2 Mechanical Shaker/Magnetic Stirrer

D-2.3 TLC Plates — (20 × 10 cm) and a suitable developing chamber.

D-2.4 A Suitable Spreading Device for Adjusting Layer Thickness

D-2.5 Conical Flask — 300 to 500 ml.

D-2.6 Porcelain Dishes — 50 ml.

D-2.7 Separating Funnel — 500 ml.

D-2.8 Electric Oven with Temperature Control Device

D-2.9 Desiccator Containing an Efficient Dryer

D-2.10 Graduated Micro-pipettes/Micro Syringes

D-3 REAGENTS

D-3.1 Silica Gel — Containing suitable amount of calcium sulphate as binder.

D-3.2 Whatman Filter Paper No. 42 (or Equivalent).

D-3.3 Anhydrous Sodium Sulphate

D-3.4 Acetone

D-3.5 Acetone : Water (1 : 1, *v/v*).

D-3.6 Chloroform

D-3.7 Methanol

D-3.8 Solvent System — Chloroform : Methanol (85 : 15, *v/v*)

D-4 PREPARATION OF TLC PLATES

The plates are coated with silica gel ‘G’ by a suitable spreading device, adjusting the layer-thickness at 300 nm, allowed to set and activated at 115 ± 1 °C for an hour. The plates are stored in desiccator.

D-5 PROCEDURE

Take 10 ml of sample in a conical flask and add 50 ml acetone solution (**D-3.5**). Heat the mixture on a boiling water bath till simmering starts. Shake/stir the mixture using a mechanical shaker/magnetic stirrer for 15 min. Let the mixture attain the room temperature and the oily layer float on the surface. Filter through a water-soaked filter paper (No. 42). Discontinue the filtration after the acetone extract stops trickling. Transfer the filtrate into a separating funnel and extract 5 times with 3 ml of purified chloroform shaking the mixture well, each time. Break the emulsion (if formed) by dropping a few crystals of anhydrous sodium sulphate. Clean up both the portions of this extract by passing it slowly through a column, containing suitable amount of anhydrous sodium sulphate. Receive the eluate in a porcelain dish. Evaporate the solvent on a boiling water bath and redissolve the residue in 0.2 ml dry chloroform. Spot 0.05 ml on a silica gel coated plate (**D-4**). Develop the plate at chamber saturation, using the above solvent system (**D-3.8**) till the solvent front reaches the height of 10 cm. Dry the plate by hair dryer and place it in an oven (maintained at 60 to 80 °C) for 5 to 10 min.

D-6 VISUALISATION OF FLUORESCENT SPOTS

The plate is visualized under ultra violet light in the long wave region (365 mm). In case of hot pressed castor oil, two green fluorescent spots at R_f 0.5 and one deep blue spot at R_f 0.9 appear. A blue spot around R_f 0.7 may also appear sometimes. In case of cold pressed castor oil blue spots at R_f 0.9 and 0.7 may appear but the specific green spots shall be absent.

D-7 Sensitivity

The method is highly sensitive in detecting the type of processing of castor oil. The genuine cold drawn castor oil can only pass the test. Hot pressed castor oil even after refining and bleaching fails to pass the test. The method is also capable of detecting the admixture of as low as 5 to 10 percent, hot pressed castor oil with cold pressed castor oil.

NOTES

1 Development at chamber saturation is recommended in order to achieve sharpness in resolution and improve the reproducibility of R_f values.

2 Solvent mixture shall be prepared with care and as far as possible prepared freshly before each use.

ANNEX E

[*Table* 1, *Sl No.* (xiv)]

DETERMINATION OF PEROXIDE VALUE

E-1 REAGENTS

E-1.1 Glacial Acetic Acid [*see* IS 695 ‘Acetic acid’].

E-1.2 Chloroform [*see* IS 5296 ‘Chloroform, pure and technical’].

E-1.3 Saturated Potassium Iodide Solution

E-1.4 Sodium Thiosulphate — 0.01 N.

E-1.5 Starch Solution

E-2 PROCEDURE

Weigh 5.0±0.5 g of the sample in a 250 ml glass-stoppered conical flask. Add 30 ml of a mixture of 3 volumes glacial acetic acid and 2 volumes of chloroform. Swirl until dissolved, and add 0.5 ml of saturated potassium iodide solution. Allow to stand for exactly one minute, with occasional shaking, add 30 ml of water. Titrate gradually, with continuous and vigorous shaking, with 0.01 N sodium thiosulphate solution until the yellow colour almost disappears. Add 0.5 ml of starch solution, continue the titration, shaking vigorously until the blue colour just disappears (A). Carry out a blank determination under the same condition without adding any sample (B). The volume of 0.01 N sodium thiosulphate in the blank determination must not exceed 0.1 ml.

E-3 CALCULATION

Calculate the peroxide value from the expression:

$$\text{Peroxide value} = \frac{(A-B)\times 10}{M}$$

where

A = volume in ml, of 0.01 N sodium thiosulphate required for titration;

B = volume in ml, of 0.01 N sodium thiosulphate required for blank titration; and

M = mass in g, of the sample.

ANNEX F

[*Table* 1, *Sl No.* (xv) (a)]

TEST FOR HEAVY METALS

F-1 OUTLINE OF THE METHOD

The color produced with hydrogen sulphide solution is matched against that obtained with standard lead solution.

F-2 APPARATUS

F-2.1 Nessler Cylinders — 50 ml capacity.

F-3 REAGENTS

F-3.1 Concentrated Hydrochloric Acid [*see* IS 265 ‘Hydrochloric acid — Specification’].

F-3.2 Concentrated Nitric Acid [*see* IS 264 ‘Nitric acid — Specification’].

F-3.3 Dilute Acetic Acid — 6 percent acetic acid (60 ml diluted to 1000 ml water).

F-3.4 Hydrogen Sulphide Solution — Saturated.

F-3.5 Standard Lead Solution — Dissolve 1.600 g of lead nitrate in water and make up the solution to 1 000 ml. Pipette out 10 ml of the solution and dilute again to 1 000 ml with water. One milliliter of this solution contain 0.01 mg of lead (as Pb).

F-4 PROCEDURE

F-4.1 Ignite 1.000 g of the material in a silica dish until completely ashed. To the residue add 1 ml of hydrochloric acid and 0.5 ml nitric acid and evaporate to dryness on the steam bath. Dissolve the residue in 5 ml hot water and 1 ml dilute acetic acid and transfer to Nessler cylinder washing in with water. In the second Nessler cylinder, place 1 ml of dilute acetic acid and add 2 ml of standard lead solution.

F-4.2 Add 10 ml of hydrogen sulphide solution to each Nessler cylinder and make up the volume with water to 50 ml. Mix and allow to stand for 10 min. Compare the colour produced in the two Nessler's cylinders. Blank determination without samples are recommended to avoid errors arising out of reagents.

F-5 RESULTS

The limit prescribed in Table 1 shall be taken as not having been exceeded if the intensity of colour produced in the test with the material is not greater than that produced in the second Nessler cylinder.

ANNEX G

[*Table* 1, *Sl No.* (xv) (c)]

DETERMINATION OF ARSENIC

G-1 OUTLINE OF THE METHOD

Arsenic present in a solution of the material is reduced to arsine, which is made to react with mercuric bromide paper. The stain produced is compared with a standard stain.

G-2 REAGENTS

B-2.1 Concentrated Sulphuric Acid [*see* IS 266 'Sulphuric acid — Specification'].

G-2.2 Concentrated Nitric Acid [*see* IS 264 'Nitric acid — Specification'].

G-3 PREPARATION OF SAMPLE

Weigh 1.000 g of the sample in a Kjeldahl flask of 500 ml capacity. Add 5 to 10 ml of concentrated nitric acid followed by 4 ml of concentrated sulphuric acid. Heat cautiously. Add drop by drop more nitric acid, if required, from a pipette to speed up the oxidation of the sample. The total amount of nitric acid shall be noted for use in the control test. When oxidation is complete, the solution is a clear and faint yellow; at that stage, add 20 ml of water and again boil to fuming. Ensure removal of all nitric acid.

G-4 PROCEDURE

Carry out the test for arsenic with the solution prepared in **G-3** as prescribed in IS 2088. For comparison, prepare a stain using 0.002 g of arsenic trioxide.

ANNEX H

[*Table* 1, *S1 No.* (xvii)]

DETERMINATION OF LIGHT ABSORBANCE BY UV VIS SPECTROMETER

H-1 PROCEDURE

Measure the absorbance of 1 percent solution (*w/v*) of the material in ethanol (95 percent) at a wavelength of 269 nm using the path length of 1 cm at 24° to 26°.

ANNEX J

[*Table* 1, *Sl No.* (xviii)]

GAS CHROMATOGRAPHIC ANALYSIS

J-1 OUTLINE OF THE METHOD

This test procedure is used to determine the fatty acid profile using gas chromatography – flame ionization detector (GC-FID) by methylation of oil to their respective fatty acid methyl ester (FAMEs) using boron trifluoride (BF_3) in methanol. The main application of this method is to determine the percentage composition of fatty acids in oils.

J-2 APPARATUS

J-2.1 Screw–Capped Pyrex Culture Tube with Teflon Screw Cap (16 mm × 120 mm).

J-2.2 Hot Air Oven

J-2.3 Gas Chromatograph Equipped with Flame Ionization Detector

J-2.4 Capillary Column (100 m × 0.25 mm × 0.2 µm).

J-2.5 Analytical balance (Accuracy 0.1mg)

J-2.6 Micropipette (200 µl –1 ml).

J-3 REAGENTS

J-3.1 Fatty Acid Methyl Ester, C_{8-22} (Certified Reference Material).

J-3.2 Methyl Ricinoleate (Certified Reference Material).

J-3.3 *n*-Hexane (HPLC grade).

J-3.4 BF_3–Methanolic Complex Solution, 7 percent (*w/v*)

J-3.5 Toluene (HPLC grade).

J-3.6 Anhydrous Sodium Sulphate

J-3 CHROMATOGRAPHIC CONDITIONS

Oven temperature :	Initial 100 ºC hold for 5 min, ramp at 4 ºC to 240 ºC, hold at 240 ºC for 30 min
Carrier gas :	Nitrogen gas
Flow rate :	0.7 ml/min
Injector temperature :	230 ºC
Detector temperature (FID) :	250 ºC
Injection volume :	1 µl
Run time :	67.5 min

J-4 PROCEDURE

J-4.1 Sample Preparation

J-4.1.1 *Preparation of Fatty Acid Methyl Ester*

J-4.1.1.1 Weigh accurately about 50-100 mg sample in a Pyrex Culture Tube. Add 2 ml of BF_3–methanolic complex solution (**J-3.4**) and 1.0 ml of toluene. Incubate the pyrex tube in an oven at 100 °C for 45 min in hot air oven. Gently shake the tube after every 10 min during incubation. Allow tube to cool to room temperature (20-25 °C). Add 5.0 ml of double distilled water, 2.0 ml hexane and approximately 1.0 g sodium sulphate. Cap the vial and shake for 5.0 min in vortex mixer. Allow the layers to separate and carefully take upper hexane layer using micropipette. Filter the hexane layer through 0.22 µm PTFE filter into GC Vial**.**

PRECAUTION — Boron trifluoride may be fatal if inhaled, avoid contact with skin, eyes and respiratory tract.

J-4.1.2 *Preparation of Reference Standard Solution*

Take 1 ml each of 10 mg/ml FAME mix standard and 10 mg/ml ricinolic acid methyl ester standard in 10 ml volumetric flask and make up to the mark with *n*-hexane.

J-4.2 System Suitability

J-4.2.1 Condition the column at 240 ºC till a stable signal is obtained. Allow the gas chromatograph to equilibrate at 100 ºC and obtain a stable signal before proceeding the analysis.

J-4.2.2 Analysis of FAME Standard — Verification of the resolution of all 20 peaks with reference to the chromatogram.

J-4.2.3 Acceptance Criteria — Resolution of the all 20 peaks with reference to the chromatogram at given in Table 2.

NOTE — From customized Reference Standard solution, verification for resolution of 19 peaks is done as per standard FAME (C_{8-22}) and 1 peak with standard methyl ricinoleate.

Table 2 List of Analytes

(*Clause* J-4.2.3)

Elution	Analyte	CAS Number
1	Methyl octanoate	111-11-5
2	Methyl decanoate	110-42-9
3	Methyl laurate	111-82-0
4	Methyl tridecanoate	1731-88-0
5	Methyl tetradecanoate	124-10-7
6	Myristoleic Acid Methyl Ester	56219-06-8
7	Methyl pentadecanoate	7132-64-1
8	Methyl palmitate	112-39-0
9	Methyl Palmitoleate	1120-25-8
10	Methyl heptadecanoate	1731-92-6
11	Methyl octadecanoate	112-61-8
12	trans-9-Elaidic acid methyl ester	1937-62-8
13	cis-9-Oleic acid methyl ester	112-62-9
14	Methyl Linoleate	112-63-0
15	Methyl Arachidate	1120-28-1
16	Methyl Linolenate	301-00-8
17	Methyl cis-11-eicosenoate	02-09-2390
18	Methyl docosanoate	929-77-1
19	Methyl erucate	1120-34-9
20	Methyl ricinoleate	141-24-2

J-4.3 Sample Analysis

Make one injection of solvent blank, one injection of FAME mix standard (**J-4.1.2**) and duplicate injection of the sample(s).

J-5 CALCULATION

Identify individual FAMEs in the sample chromatogram using the reference chromatogram based on retention time and calculate percent composition by using the method of area normalization.

ANNEX K

(*Foreword*)

COMMITTEE COMPOSITION

Cosmetics Sectional Committee, PCD 19

Organization	*Representative(s)*
Drugs Controller General (INDIA), Delhi	Dr V. G. Somani (***Chairman***)
All India Cosmetic Manufacturers Association, Mumbai	Ms Kajal Anand Dr Virendra V. Chavan (*Alternate*)
Chemstar Limited, Mumbai	Shri Sunil Joshi
Cavinkare Private Limited, Chennai	Dr T. Kumar Dr Gireesh Kumar (*Alternate* I) Dr S. Sankar Kalidas (*Alternate* II)
Central Drugs Standard Control Organization (CDSCO), Delhi	Dr S. P. Shani
Central Drugs Testing Laboratory (CDTL), Chennai	Ms C. Vijaya Lakshmi Dr J. Uma Maheswari (*Alternate*)
Consumer Voice, New Delhi	Shri H. Wadhwa
CSIR Indian Institute of Toxicological Research, Lucknow	Dr A. B. Pant Dr R. S. Ray (*Alternate*)
Central Drugs Testing Laboratory (CDTL), Mumbai	Dr Raman Mohan Singh Shrimati S. U. Warde (*Alternate* I) Shrimati Sujata S. Kaisare (*Alternate* II)
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Consumer Guidance Society of India, Mumbai	Dr Sitaram Dixit Dr M. S. Kamath (*Alternate*)
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Drugs Control Department, Delhi	Shri A. K. Nasa Shri K. R. Chawla (*Alternate*)
Envisbe Solutions Pvt Limited, Mumbai	Shri Benedict M. Mascarenhas
Essential Oil Association of India (EOAI), Noida	Shri Ajay K. Jain
Food Safety and Drug Administration, Lucknow	Dr Anita Bhatnagar Jain Shri Dinesh Kumar Tiwari (*Alternate*)
Food and Drugs Control Administration Gujarat, Gandhinagar	Dr H. G. Koshia Shri V. R. Shah (*Alternate*)
Food and Drugs Administration Haryana, Panchkula	Shri Narender Kumar Ahooja Shri Manmohan Taneja (*Alternate*)
Food and Drugs Administration Maharashtra, Mumbai	Shri O. S. Sadhwani
Fragrance and Flavours Association of India, (FAFAI), Mumbai	Shri Hasmukh Patel

Organization	*Representative(s)*
Galaxy Surfactants Limited, Mumbai	Shri R. K. Singh Shri Sagar Trailokya (*Alternate* I) Shri Pramod Sabat Trailokya (*Alternate* II)
Godrej Consumers Products Limited, Mumbai	Ms Rupinder Kaur Rawat Dr Manoj Gaur (*Alternate*)
Hindustan Lever Limited (HUL), Mumbai	Ms Vrinda Rajwade
Hygienic Research Institute Private Limited, Mumbai	Dr Jayashree Anand Shri Manoj Sarkar (*Alternate*)
Indian Pharmacopoeia Commission (IPC), Ghaziabad	Dr Anil Kr Teotia Dr Manoj Kr Pandey (*Alternate*)
ITC R & D Centre, Bengaluru	Dr Gurubasavaraja Km Dr James Bhaskar (*Alternate* I) Dr John Bosco Stanislaus (*Alternate* II)
Indian Beauty and Hygiene Association (IBHA), Mumbai	Ms Malathi Narayanan
Johnson and Johnson Limited, Mumbai	Dr Dilip Tripathi Shri Rajneesh Kumar (*Alternate*)
Kelkar Education Trusts (KETS) Scientific Research Centre, Mumbai	Dr S. S. Barve
Loreal India Private Limited, Mumbai	Ms Veena Balgi Ms Rupali Turakhiya (*Alternate*)
Marico Limited, Mumbai	Dr Mitali Hedge Dr Sudhakar Mhaskar (*Alternate* I) Shri Prabodh S. Halde (*Alternate* II)
Mikasa Cosmetics Limited, Ahmedabad	Ms Trupti Patel
Ministry of Micro, Small and Medium Enterprises (MSME), Delhi	Dr Arun Kumar Dr Izzatullah (*Alternate*)
Ministry of AYUSH, Delhi	Dr D. C. Katoch
Procter and Gamble, Mumbai	Shri Girish Parhate
PETA India, Mumbai	Shri Manilal Valliyate Ms Dipti M. Kapoor
The Himalaya Drug Company, Bengaluru	Dr Sundaram Ramachandran Dr Krishnan Sriraman (*Alternate*)
Voluntary Organization In Interest of Consumer Education (VOICE), Delhi	Dr M. A.U. Khan
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Shrimati D. Uma
Scientist 'D' (PCD), BIS

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Central Drugs Testing Laboratory, Chennai	Shrimati C. Vijaya Lakshmi Dr J. Uma Maheswari (*Alternate*)
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Dabur India Limited, Sahibabad	Dr S. K. Luthra Shri Prasun Bandyopadhyay (*Alternate* I) Shri Shivaji Rai (*Alternate* II)
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Paxchem Limited, Mumbai	Shri Ashok Pathare
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